REMARKS

Claims 1-5 are all the claims pending in the application.

Review and reconsideration on the merits are requested.

Claims 1-5 are rejected under 35 U.S.C. § 102(b) over Mookherjee et al ('098), which Applicants refer to as Mookherjee herein.

This rejection is respectfully traversed.

The Examiner's basic position is that when interpreted broadly, the claims of the present application include the conditions of Mookherjee and are thus anticipated by Mookherjee, and Applicants should incorporate into the claimed process conditions which render the process novel over the prior art.

Prior to discussing the approach Applicants have used in the claims, Applicants first discuss the reaction conditions of Mookherjee, the discuss the reactions condition of the present invention when an acid catalyst is used and then discuss the reaction conditions of the present invention when a basic catalyst is used.

The reaction conditions of Mookherjee are ethanol as a solvent, sodium hydroxide as a catalyst, under reflux (boiling point of ethanol: 78°C), for 25 hours in Ex. II; and methanol as a solvent, sodium methoxide as a catalyst, under reflux (boiling point of methanol: 64°C), for 24 hours in Ex. X. Thus, the reaction for Mookherjee is carried out in an alcohol solvent using a base (e.g., sodium hydroxide, sodium methoxide) as a catalyst, and at a reaction temperature of lower than 80°C.

The reaction conditions according to the present invention can be classified into the case of using an acid as a catalyst and the case of using a base as a catalyst.

Acid Catalyst

Reaction conditions of the present invention when an acid is used as a catalyst are: ethanol as a solvent, $RhCl_3.3$ (H_2O) as a catalyst, at 90°C, for 24 hours in Ex. 1; and toluene as a solvent, p-toluenesulfonic acid as a catalyst, at 100°C, for 6 hours in Ex. 4. Because an acid is used as a catalyst, the reactions of Ex. 1 and Ex. 4 are clearly different from the reaction of Mookherjee.

Basic Catalyst

Reaction conditions of the present invention when a base is used as a catalyst are: tetraethyleneglycol monomethyl ether as a solvent, t-BuOK as a catalyst, at 175°C, for 4 hours in Ex. 2; DMSO as a solvent, t-BuOK as a catalyst, at 100°C, for 4 hours in Ex. 3; DMSO as a solvent, MeOK as a catalyst, at 120°C, for 2.5 hours in Ex. 5; DMSO as a solvent, MeONa as a catalyst, at 140-145°C, for 5 hours in Ex. 6; DMSO as a solvent, t-BuONa as a catalyst, at 120°C, for 4 hours in Ex. 7; DMSO as a solvent, EtONa as a catalyst, 130°C, for 6 hours in Ex. 8; DMA as a solvent, t-BuOLi as a catalyst, at 140-145°C, for 6 hours in Ex. 9; DMSO as a solvent, KOH as a catalyst, at 170-190°C, for 6 hours in Ex. 10; cyclohexylamine as a solvent, sodium cyclohexylamide as a catalyst, at 120-135°C, for 3 hours in Ex. 11. Thus, in the invention, the reaction is carried out in a high boiling point solvent having a boiling point of 100°C or higher (e.g., tetraethyleneglycol monomethyl ether, DMSO, DMA, cyclohexylamine), using a base as a catalyst (e.g., KOH, MeOK, MeONa, EtONa, t-BuOK, t-BuONa, t-BuOLi, sodium cyclohexylamine), and at a temperature from 100°C to 190°C. Thus, the reaction conditions according to the present invention when a base is used as a catalyst are also different

from those of Mookherjee in that a high boiling point solvent is used and the reaction temperature is from 100°C to 190°C.

By carrying out the reaction under the reaction conditions given above, the present invention provides a product which is different from that of Mookherjee.

In light of the above, Applicants amend claims 1, 4 and 5 to call for an acid catalyst or a basic catalyst, and wherein when said catalyst is said basic catalyst the isomerizing is conducted at a temperature of at least 100°C. This is the lowest temperature used in the working Examples involving a basic catalyst. See Example 3.

Dependent claims 6, 7 and 8 are added fairly based upon the specification at page 6, lines 5-17 except for excluding the sodium hydroxide and sodium methoxide used in Mookherjee.

Dependent claims 9, 10 and 11 are added reciting the basic catalyst used in the Examples. Page 12, line 9; page 13, line 9; page 18, line 18; page 19, line 12; page 20, line 8; page 21, line 2 and page 21, line 22.

Claims 12, 13 and 14 are added defining the solvents used in the Examples involving a basic catalyst. In the order claimed, they occur in Example 2, Example 3, Example 9 and Example 11.

Finally, a claim is added defining the maximum temperature used in the Examples which involve a basic catalyst, namely 190°C for Example 10.

Applicants would like to thank the Examiner for the telephone interview granted concerning this application. Summarizing that telephone interview, the Examiner adhered to the anticipation rejection over Mookherjee and suggested that Applicants include some limit in the

claims establishing novelty over Mookherjee, for example, temperature, the solvents used the catalyst used. Applicants believe they have done this and request withdrawal of the rejection over Mookherjee and allowance.

Respectfully submitted,

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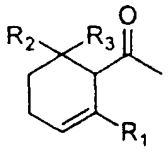
APPENDIX

VERSION WITH MARKINGS TO SHOW CHANGES MADE

IN THE CLAIMS:

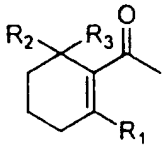
The claims are amended as follows:

1. (Twice amended) A process for producing a 2-cyclohexenyl methyl ketone represented by the following formula (1b):



. . . (1b)

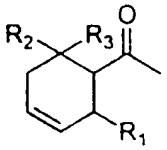
wherein R_1, R_2 and R_3 each independently represents a hydrogen atom or a methyl group and at least two of R_1, R_2 and R_3 represent a methyl group, or a 1-cyclohexenyl methyl ketone represented by the following formula (1c):



. . . (1c)

wherein R_1, R_2 and R_3 have the same meanings as defined above, or a mixture of the cyclohexenyl methyl ketones of the formulas (1b) and (1c), which comprises

isomerizing, in the presence of a catalyst, a 3-cyclohexenyl methyl ketone represented by the following formula (1a):



. . . (1a)

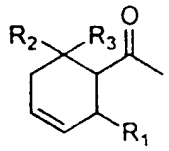
wherein, R_1, R_2 and R_3 have the same meanings as defined above, and

optionally distilling the mixture, wherein said catalyst is:

an acid catalyst; or

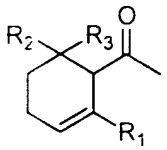
a basic catalyst, and wherein when said catalyst is said basic catalyst the isomerizing is conducted at a temperature of at least 100°C.

4. (Twice amended) A process of isomerizing, in the presence of a catalyst, a 3-cyclohexenyl methyl ketone represented by the following formula (1a):



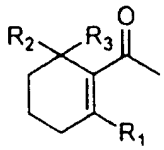
. . . (1a)

wherein R_1, R_2 and R_3 each independently represents a hydrogen atom or a methyl group and at least two of R_1, R_2 and R_3 represent a methyl group, into a 2-cyclohexenyl methyl ketone represented by the following formula (1b):



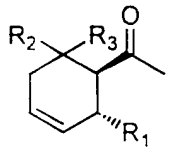
. . . (1b)

wherein R_1, R_2 and R_3 have the same meanings as defined above, or a 1-cyclohexenyl methyl ketone represented by the following formula (1c):



. . . (1c)

wherein R_1, R_2 and R_3 have the same meanings as defined above, or a mixture of the cyclohexenyl methyl ketones of the formulas (1b) and (1c) and (1a'), wherein the cyclohexenyl methyl ketone of formula (1a') is the following ~~a~~ trans 3-cyclohexenyl methyl ketone of formula (1a'):



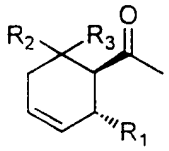
. . . (1a')

wherein R_1, R_2 and R_3 have the same meanings as defined above, wherein said catalyst is:

an acid catalyst; or

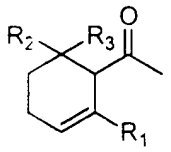
a basic catalyst, and wherein when said catalyst is said basic catalyst the isomerizing is conducted at a temperature of at least 100°C.

5. (Amended) A process for producing a mixture consisting essentially of a trans-3-cyclohexenyl methyl ketone of formula (1a'):



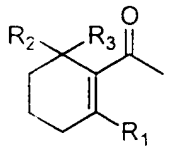
. . . (1a')

wherein R_1, R_2, and R_3 each independently represents a hydrogen atom or a methyl group and at least two of R_1, R_2 and R_3 represent a methyl group, a 2-cyclohexenyl methyl ketone of formula (1b):



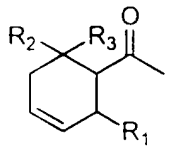
. . . (1b)

wherein R_1, R_2 and R_3 have the same meanings as defined above, and a 1-cyclohexenyl methyl ketone of formula (1c):



. . . (1c)

wherein R_1, R_2 and R_3 have the same meanings as defined above, which comprises isomerizing, in the presence of a catalyst, a 3-cyclohexenyl methyl ketone represented by the following formula (1a):



. . . (1a)

wherein, R_1, R_2 and R_3 have the same meanings are defined above, wherein said catalyst is:

an acid catalyst; or

a basic catalyst, and wherein when said catalyst is said basic catalyst the isomerizing is conducted at a temperature of at least 100°C.

Claims 6-15 are added as new claims.